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ABSTRACT:

PURPOSE: To independently perform a light irradiating intensity modulation and a light irradiation wavelength modulation by forming electrodes for generating a surface acoustic wave on a piezoelectric material substrate, and forming metal/insulator/metal tunnel junction in a surface acoustic wave generating region for generating it by the electrode.

CONSTITUTION: Electrodes for generating a surface acoustic wave represented by interdigital electrodes (SAW electrodes) 2 are formed on a piezoelectric material substrate 1. A tunnel junction made of

metal/insulator/metal, such as Au/Al<SB>2</SB>O<SB>3</SB>/Al, or Ag/MgO/Mg is formed in the surface acoustic wave generating region for generating it by the electrodes 2 to supply a current to the tunnel junction. Thus, a wide range from a visible light to near infrared light of light irradiating wavelength range is obtained to improve polarizing characteristic, and light irradiating intensity modulation and light irradiating wavelength modulation can be independently performed.

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